From anthropocentric humanism to critical posthumanism in digital education

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FROM ANTHROPOCENTRIC HUMANISM TO CRITICAL POSTHUMANISM IN DIGITAL EDUCATION

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ABSTRACT. In this conversation Sian Bayne explains theoretical and practical underpinnings of the Digital Education Group's *Manifesto for teaching online.* She defines posthumanism in relation to transhumanism, and describes the relationships between posthumanism and human learning. The conversation moves on to the historic concepts of cyberspace and cyborg. While these concepts have become slightly obsolete, the notions of smooth and striated cyberspaces, as well as the notion of cyborg learner, still offer a lot of value for contemporary digital learning. The conversation introduces the feeling of uncanny as a useful perspective for discussing the experience of digital learning. It moves on to show that approaching digital education through the lens of (digital) cultural studies is slightly dated, and offers another way of looking at digital experiences through social topologies of distance students. It analyses the metaphor of the network, shows that it still offers a lot of value, and concludes that it should be complemented by other approaches and metaphors. Looking at past concepts, it analyses the main problems with Prensky's digital native – digital immigrant binary, and calls for its complete abandon. The conversation looks into the relationships between open access to information and open education, links openness and creativity, and shows that every act of opening is simultaneously an act of closure. On that basis, it dismantles the myth that open education is a democratizing, liberating, and empowering end in itself. The conversation shows that distance is a positive principle, and that education at a distance can indeed be better than classroom education. It analyses the relationships between big data, algorithms, and the politics of data science, and calls for balancing interests of corporations and the interests of the academy. It explores teacher automation through Bayne's experience with teacherbots, and analyses the present and future of the Massive Open Online Courses (MOOCs). It analyses important contributions to the field by the networked learning community, and concludes that networked learning (NL) approach is much more advanced than the technology enhanced learning (TEL) approach. Finally, it advocates reaching beyond the entrenched, embodied legacy of humanism within education, and calls for approaching contemporary digital learning from a critical posthumanist perspective.

Keywords: critical posthumanism; digital learning; manifesto; cyberspace; smooth space; striated space; cyborg; uncanny; digital natives; digital immigrants; digital privilege; open education; digitization; plagiarism; algorithm; TEL; MOOC; artificial intelligence; networked learning

Sian Bayne is Professor of Digital Education at the University of Edinburgh, based in the Moray House School of Education, where she directs the Centre for Research in Digital Education. In 2004, Sian and colleagues launched the world renowned MSc in E-Learning, now the MSc in Digital Education. Sian's background includes English literature, digitization, museum heritage, and open education. Her current research interests revolve around the changes undergoing learning and teaching as it shifts online – current particular interests are around posthumanism and online education, the geographies of distance education, and critical digital pedagogies. Her research is informed by approaches issuing from critical posthumanism, and is particularly concerned with the need to work against the idea of digital education as a purely technical concern.

Sian has published numerous journal articles, book chapters and project reports. Sian has been involved, often in leading roles, in numerous research projects such as 'The digital futures of cultural heritage education: a social media research agenda for the Scottish National Collections' (Bayne, Ross and Bailey) (Royal Commission on the Ancient and Historical Monuments of Scotland, 2016), 'New Geographies of Learning: distance education and being 'at' The University of Edinburgh' (Bayne, Macleod, O'Shea and Ross) (University of Edinburgh, 2016a), 'Putting Art on the Map' (Bayne) (University of Edinburgh, 2016b), 'Coding the MOOC teacher' (Bayne, Ross, Macleod, Sinclair, Knox, Mehrpouya, Lee and Speed) (University of Edinburgh, 2016c), 'Managing Your Digital Footprint' (Connelly, Bayne, Osborne and Bunni) (University of Edinburgh, 2016d), and 'Dissertations at a Distance' (Ross, O'Shea and Bayne) (University of Edinburgh, 2016e).

Sian has published three books: *Digital differences: Perspectives on online education* (Bayne and Land, 2011), *Education in Cyberspace* (Land and Bayne, 2005), *Research, Boundaries, and Policy in Networked Learning* (Ryberg, Sinclair, Bayne, and de Laat, 2016). In 2008, she received the University of Edinburgh Chancellor's Award for Teaching (University of Edinburgh, 2016f). In 2016, she received the Edinburgh University Students' Association (EUSA) Best Research or Dissertation Supervisor Award (Edinburgh University's Student Association, 2016). In 2016, Sian and her colleagues produced the second version of the widely cited *Manifesto for teaching online* (Digital Education Group, 2016).

In this article, Sian discusses her ideas with Petar Jandrić. Petar is an educator, researcher and activist. He published three books, several dozens of scholarly articles and chapters, and numerous popular articles. Petar's books have been published in Croatian, English and Serbian. He regularly participates in national and international educational projects and policy initiatives. Petar's background is in physics, education and information science, and his research interests are situated at the post-disciplinary intersections between technologies, pedagogies and the society. Petar worked at Croatian Academic and Research Network, University of Edinburgh, Glasgow School of Art, and University of East London. At present he works as professor and director of BSc (Informatics) programme at the Zagreb University of Applied Sciences, and visiting associate professor at the University of Zagreb.

The Manifesto for teaching online

Petar Jandrić (PJ): I would like to start this discussion with the *Manifesto for teaching online* (Digital Education Group, 2016):

> Online can be the privileged mode. Distance is a positive principle, not a deficit. Place is differently, not less, important online. Text has been troubled: many modes matter in representing academic knowledge. We should attend to the materialities of digital education. The social isn't the whole story. Openness is neither neutral nor natural: it creates and depends on closures. Can we stop talking about digital natives? Digital education reshapes its subjects. The possibility of the 'online version' is overstated. There are many ways to get it right online. 'Best practice' neglects context. Distance is temporal, affective, political: not simply spatial. Aesthetics matter: interface design shapes learning. Massiveness is more than learning at scale: it also brings complexity and diversity. Online teaching need not be complicit with the instrumentalisation of education. A digital assignment can live on. It can be iterative, public, risky, and multi-voiced. Remixing digital content redefines authorship. Contact works in multiple ways. Face-time is over-valued. Online teaching should not be downgraded into 'facilitation'. Assessment is an act of interpretation, not just measurement. Algorithms and analytics re-code education: pay attention! A routine of plagiarism detection structures-in distrust. Online courses are prone to cultures of surveillance. Visibility is a pedagogical and ethical issue. Automation need not impoverish education: we welcome our new robot colleagues. Don't succumb to campus envy: we are the campus.

Why did you decide to write the *Manifesto*? What are its main theoretical and practical underpinnings?

Sian Bayne (SB): The *Manifesto* is designed to provoke the field of digital education practice by trying to distil some of the most interesting research findings and theoretical perspectives into punchy statements that could be used as starting points for discussion. I suppose we were working against the tendency for technology to be used instrumentally within education, which is often underpinned by approaches which understand technology as the primary force driving educational practice. We were trying to distil arguments against this type of thinking, and to get people to think about some of the critical dimensions of educational practice. The *Manifesto* is aimed at practitioners, so it tries to provoke and to move forward some of the ways that we think about digital education practice. In that regard, I think that the *Manifesto* has worked really well – it has been well received, and it prompted quite a lot of responses and discussions.

PJ: The *Manifesto for teaching online* (Digital Education Group, 2016), and also your work in more general, is heavily influenced by posthumanism. Please describe the relationships between posthumanism and human learning.

SB: Posthumanism is concerned with the questioning of the foundational role of 'humanity' as it has been constructed in modernity. Rejecting clear distinctions between 'nature' and 'culture', it also rejects dualisms and the binaries we have tended to draw on to define what it means to be human in the world: human/machine, human/animal, subject/object, self/other and so on.

Posthumanist thought within education is a way of addressing the failures of the humanist assumptions which, I would say, have driven much educational research and practice over the last few decades. Posthumanism is useful, because it asks people to think what would education look like if we did not take a position which sees the human as a kind of transcendent observer of the world. Instead, it sees humans as entangled with the world. Posthumanism does not see education as being about production of a certain kind of humanist subject. Instead, it sees education as what Richard Edwards (2010) calls a 'gathering'. So for me, it is quite a radical way of thinking about some of the predicaments that we are facing at a global scale such as climate change, and the age of automation and algorithm. In order to confront these, we need to shift away from the default humanism that underpins most educational practice.

PJ: Posthumanism and transhumanism are often used as synonyms. Yet, your work shows that the two "are in fact in radical tension with each other" (Bayne, 2014: 12). What are the main differences between posthumanism and transhumanism? Why are they important?

SB: I would agree here with some of the theorists in critical posthumanism (e.g. Wolfe, 2003) who point out that transhumanism is essentially an extension of the humanist agenda – it is about the inevitability of scientific progression, about the capacity of human beings to reengineer themselves, about seeing the human as something that has the capacity to become better and better through scientific progress and technology development. Posthumanism, in its critical forms, is more about thinking about what it means to be a human subject, and the extent to which the notion of the human subject is still useful. Transhumanism and posthumanism are radically different – transhumanism is an extension of the humanist project, whereas posthumanism is critical of humanism.

PJ: Published in 2004, your PhD dissertation is entitled *Learning Cultures in Cyberspace* (Bayne, 2004). Only a year after, you and Ray Land published the book *Education in Cyberspace* (Land and Bayne, 2005). What is cyberspace? What are the main similarities and differences between cyberspaces and our 'regular' spaces?

SB: Research has moved quite a way since Ray and I published that book. Cyberspace, which was about the sense of newness and the potential of the online during the 1990s, has become a legacy term – no-one uses it any more. In order to explain why, insights from digital and virtual ethnography which have developed during the past decade or so are useful (e.g. Hine, 2000; Miller and Slater, 2001). This body of work suggests that the online and the digital is not a special or

separate domain from embodied, co-present spaces that we inhabit day to day – instead, the two kinds of spaces are inextricably linked with each other.

In education, there is a lot of work to be done in this area – for example, in thinking about the mutual embodying of the online space and campus space. I think the major challenge is shifting universities away from the assumption that presence is the privileged mode, that to be on campus is the only way in which students are able to experience real, authentic higher education. Instead, we should think about what it means to have a global campus, what it means for the campus to extend beyond the material into the digital, and what it might mean for the university to genuinely treat distance online students as equal to those who are present on campus. I think it is a huge challenge.

PJ: Apparently, cyberspace can be smooth and / or striated (Bayne, 2004a: 155-172; Bayne, 2004b). Please describe these concepts. What is their relevance for human learning?

SB: Your question is drawn from quite an old paper which is using the notion of smooth and striated space from Deleuze and Guattari (1988). Back in 2004, I suggested that there were 'striated' kinds of digital learning spaces such as the regulated, hierarchical matrix of virtual learning environments. Then there were emergent spaces of the World Wide Web that I described – drawing on Deleuze and Guattari – as 'smooth' – non-hierarchical spaces, spaces of anonymity, spaces in which things could happen differently. However, you cannot take a strong binary approach to these things – Deleuze and Guattari are very clear that the most interesting thing about smooth and striated spaces are ways in which they permeate and appropriate each other.

Just like in the early 2000s, in today's digital education it is still possible to think about the emergence of smooth and striated spaces. I think that Massive Open Online Courses (MOOCs) were a great example of the rearticulation of smoothness and striation for more current learning technologies. In the beginning we had the cMOOCs, which were experimental spaces. Dave Cormier's work on the Rhizo MOOCs, for example, was genuinely trying to explore what a smooth Internet space might look like in massive higher education (Honeychurch, Stewart, Bali, Hogue, and Cormier, 2016). Then later, in 2013-2014, the xMOOCs emerged, conducted on Coursera and other platforms, which produced strongly striated spaces. So I think that the metaphor of smooth and striated is still apparent, and that we can apply this metaphor to contemporary digital education.

PJ: Speaking of cyberspace, we cannot avoid its main protagonist: the cyborg. Who / what is the cyborg? How does the cyborg learn; how should he/she/it be taught?

SB: Cyborg is a bit like cyberspace – nowadays it is used much less. Haraway's cyborg theory (1991) was very radical – these days, it is still very deeply influential. The body of literature which emerged in the late 1990s and the early 2000s about cyborg pedagogy is still really useful and influential in the field of digital education. However, most digital education practice still has not taken

onboard the idea that the cyborg learner, or the online learner, or the digital learner, is a different kind of subject.

PJ: Arguably, the cyborg is a typical example of an uncanny figure. According to Royle,

> The uncanny is ghostly. It is concerned with the strange, weird and mysterious, with a flickering sense (but not conviction) of something supernatural. The uncanny involves feelings of uncertainty, in particular regarding the reality of who one is and what is being experienced. Suddenly one's sense of oneself … seems strangely questionable. … It is a crisis of the natural, touching upon everything that one might have thought was 'part of nature': one's own nature, human nature, the nature of reality and the world. But the uncanny is not simply an experience of strangeness or alienation. More specifically, it is a peculiar commingling of the familiar and unfamiliar. … As a crisis of the proper and natural, it disturbs any straightforward sense of what is inside and what is outside. The uncanny has to do with a strangeness of framing and borders, an experience of liminality. (Royle, 2003)

Your work explores "the notion of the uncanny as a way of thinking through some of the more radical and, ironically, enlivening implications of digitality for our academic practice" (Bayne, 2010: 11). How can we employ the concept of the uncanny for better understanding of teaching and learning?

SB: Back in 2010, I wrote that paper in response to the emergence of virtual worlds as environments for learning, in particular Second Life. My students found these environments, where they were replicated as a kind of Doppelganger, very uncanny – as an avatar their representation was both familiar and deeply unfamiliar to them. Furthermore, the kinds of things that would happen to students in these virtual worlds could be very strange and could create ontological uncertainty in terms of how we identify with our avatars, what 'we' become when 'we' are immersed in virtual space. I felt the same things, as a teacher. When I first started using Second Life for teaching, I wanted to try and connect that sense of the uncanny to some of the other literatures which were focused, at that time, on the notions of troublesome knowledge, spatial concepts, liminality, difficulty and strangeness about higher education (Meyer and Land, 2005). So I was thinking how can we use these digital environments, which are in themselves materially uncanny, to emphasise in a creative way the generative uncanniness of undertaking higher education, how it requires us to take new subject positions, develop new kinds of identities, learn and play in different kinds of spaces – literally and metaphorically.

For me, at a time, the notion of the uncanny was a really useful framing of what I thought that the contribution of digital education could be to education generally – and I still think that is the case. Although, obviously, as everything in digital education moves on so quickly, the kinds of uncanniness we are now experiencing are quite different. They are more to do with big data, with algorithmic cultures… When you get a Tweet coming to your Twitter feed, which may or may not be

generated by a bot – that creates a kind of ontological confusion. Or, when you see something on Facebook, and you think how these posts are generated and how they relate to your own personal history or your own personal identity within these social spaces – that also creates a profound sense of uncanniness. On that basis, I think that the uncanny is still very much a part of digital life, and therefore of digital education as well.

PJ: The feeling of uncanny has provoked some of the best science fiction out there – Gibson's *Neuromancer* (1984) is a typical case in the point. And, I could not help but notice that your curricula are packed with fictional sources… What is the relationship between fictional and scientific accounts of posthumanism? How do they inform each other; how do you use their interplay in your work?

SB: I think science fiction has been very useful in preparing us for answering some of the difficult questions about posthumanism. For example, how might we deal with the notion of artificial intelligence, machine extensions, ethical distinctions we might draw between the human and the non-human… Going back to Frankenstein and earlier, there is a strong trajectory of science fiction texts which help us to grapple with these questions. Today, we are getting to the point where many of these texts seem more realistic than they ever have been! So I think we are quite well positioned, thanks to these science fiction authors, to deal with issues such as what we want artificial intelligence in education to look like, how automation of aspects of teaching might affect our students and our profession, how the politics of algorithms might work for – or against – our students' interests and so on.

All those quite difficult ethical questions have been quite useful to us. When we are looking at developing new educational technologies, and new educational uses of existing technologies, we could therefore do worse than look back to some of the science fiction writing in this area. For example, we ask our students in the course on digital education to read some early science fiction texts such as *The Time Machine* (Wells, 1895), to help them prepare for some of more troubling and challenging questions they are going to have to address when thinking about the future of digital education.

Distance is a positive principle

PJ: In the second part of the 20th century, people such as Henry Giroux and Peter McLaren have brought the perspective of cultural studies into educational research and practice. What does it mean to look at human learning from the position of digital cultural studies?

SB: I am not sure that digital culture is a very useful term any more… maybe it was in the 1990s and the early 2000s, when we were thinking about what was new and exciting about the digital. But now, as we shift into a post-digital era, it is less useful to think about digital cultural studies as something which is separate from cultural studies itself. It is a bit like our earlier conversation about cyberspace. I am not sure that it is easy any more – if it ever was – to separate digital culture from material culture. I suppose I am more interested in thinking about the social and the

material connections around online and offline culture, perhaps trying to move beyond this notion of digital culture as a separate thing.

PJ: It surprises me that you decided to move beyond the notion of digital cultures so quickly… Just a few years back, you rebranded your MSc in E-Learning to MSc in Digital Education (University of Edinburgh, 2016g), and you are already over it…

SB: Back in 2014, when we made that change, I think we would probably have preferred to call it post-digital education, but it seemed too early… Our field changes quickly, and in 2-3 years from now, we are bound to need to devise a new set of terms.

PJ: Speaking of the past: for more than a decade, you have been a fierce critic of Marc Prensky's (2001) popular trope Digital natives, digital immigrants (Ross and Bayne, 2007; Bayne and Ross, 2011). What are the main problems with this trope? Why should we stop thinking about digital learning through this binary?

SB: Since Jen and I wrote that paper, back in 2007, the whole Prensky binary has been taken apart from multiple perspectives and there has been a lot of empirical evidence that generation does not determine approach to using technology (Kennedy and Krause, 2008). There were a lot of quite big projects, around the world, which demonstrated that point. So Jen and I wanted to engage with that binary from a critical perspective, and look at how native-immigrant discourse structurally deprivileged teachers. The native-immigrant binary aligns teachers with the immigrant (backward looking, analogue, legacy) and students with the native (forward looking, multitasking, digital), and provokes deeply essentialist conclusions which worked to de-value teaching as a profession. It very effectively draws a kind of invisible wedge between teachers and students, and suggests that teachers as immigrants are never going to be able to effectively teach the native generation of students. Therefore, the native-immigrant binary has had long term bad effects on the ways in which technology is being seen within education.

These days, the empirical evidence and critical understanding around this issue have moved on to the extent that we do not hear too much about digital immigrants. The term has just become too politicized… However, we do find that the notion of digital native is still very current, perhaps not so much within the academia, but definitely within policy discourses and mainstream news media. So the damaging native-immigrant binary continues to influence the ways in which we think about the effects of technology on education. We probably just have to keep making this point, and hope that eventually some day and in some future it will go away.

PJ: Your recent article "Being 'at' university: the social topologies of distance students" (Bayne, Gallagher and Lamb, 2013) explores the notions of space and mobility in the age of digital cultures. Please describe the new social topologies emerging from distance teaching and learning. What is their relation to the traditional, on-campus topologies?

SB: That piece of work was drawing on Annemarie Mol and John Law's work on social topology, over quite a few publications (Mol and Law, 1994; Law and Mol, 2001; Law, 2002), in which they have drawn a distinction between four different kinds of spaces: bounded space, networked space, fluid space, and space of fire. We wanted to think whether we could use those spatial topologies to rethink the dominance of sedentarism within universities. By sedentarism, I mean the tendency to privilege the on-campus, the present, the here, and to deprivilege the distant, the not here, the overseas, the globally distributed (Sheller and Urry, 2006). I found those four different kinds of social topology really useful.

The notion of bounded space, which Mol and Law talk about (Mol and Law, 1994), fits really well into ways in which we traditionally think about campus space or city space. To be at university is to be within the bounded space of the campus. The idea of networked space, again, matches quite well onto traditional notions of online networked learning, which is more about the relational nature of being online. I found that the notion of fluid space, which is where boundaries and network nodes are constantly shifting, matches really well with the contemporary digital education working across multiple environments, with multiple spaces, and with highly mobile subjectivities, which are informed not just by humanistic assumptions, but also by the ways in which they are constructed through data, algorithms and networks. Fire space, characterised by the flickering of presence and absence, also applies interestingly to the ways we 'do' education online: both there and not-there simultaneously. I found this to be a really useful framework for arguing for more topological multiplicity within the way in which we think about what it means to study at the university. There is still more work to be done with these notions of space – these conclusions are just a starting point.

PJ: Speaking of networked society (Van Dijk, 1999; Castells, 2001), networked learning, and networked labour, we often forget that the concept of the network, certainly within the context of the social sciences, is actually just a metaphor. And, like all metaphors, it carries along many limitations and opportunities. Please analyse the metaphor of the network – what are its limitations and opportunities in the context of education?

SB: This links to the previous question about the different kinds of social topology and the works of Mol and Law. Currently, digital education is built around the idea of the network, which is a valuable metaphor in its own right. However, we do need nuances, and we do need to think about topological and / or metaphorical multiplicity. The network is not enough, so we need to think how it relates to other kinds of connections which may be more fluid, flickering, and volatile. I do not think the metaphor of the network is done with – we need it to move forward, but we also need to temper it and bring it up against other models and metaphors for understanding spaces of learning in a digital world.

PJ: Arguably, one of the strongest and most consistent messages in your work can be described by the following quote: "The digital represents not an enhancement to, extension of, or substitute for familiar, offline practices. Rather, it is a

privileged mode, one in which new ontological positionings, and new dispositions toward teaching and toward knowledge might be explored and delighted in." (Bayne, 2010: 11) Also, the first sentence in the *Manifesto for teaching online* is: "Online can be the privileged mode" (Digital Education Group, 2016). What is the digital privilege; how does it manifest?

SB: When you say digital privilege, it seems like you are saying that people who are studying in the digital realm are more privileged in social terms. However, what we really address is the sense in which higher education has privileged the notion of being on campus and deprivileged the notion of being at a distance. My argument would be, that even by using the term distance learning, we are assuming the on-campus as the norm and digital education at a distance as a kind of deviant position. The *Manifesto* deliberately sets out to provoke and to try and shift that position by opening up the idea that the online can be the privileged mode. In short, online can be better!

We see a lot of this with our students… Students who have studied really good online programs often say: "That was way better than anything I experienced on campus, for this or that reason". I think that we just need to keep saying over and over again that online can be the privileged mode – that distance is not the second best. Distance is a positive principle. This is indeed one of the strongest and the most consistent messages that has come out of my work and the work of my colleagues. And that is why we used it to kick off the *Manifesto*.

PJ: In 2015, together with Jeremy Knox and Jen Ross, you edited a Special Issue of Learning, Media and Technology entitled Open Education: The need for a critical approach (Bayne, Knox and Ross, 2015). What is open education and why is it so important?

SB: There are lots of definitions of open education. In the context of your question, open education is a way of enabling access to education and educational materials to those who are not enrolled in formal education or do not have the means to buy expensive texts, journal articles, and other materials. We published that Special Issue in response to the strong metanarrative or driving discourse around the open education movement, which sees openness as a democratizing force, and which results in openness of educational materials as an end in itself. The voices which try and critique that view are quite few and far between. In the Special Issue, for example, Richard Edwards (Edwards, 2015), talks about how you cannot have openness without also having closures. So any kind of open education initiative will simultaneously open up education to some people and close off education to other people. For example, a MOOC will open education to a massive population of global learners, and will close off access to those who like a more personal, one-to-one relationship with their peers and their teachers. There are lots of examples of this.

At the time that we produced that Special Issue, there was a strong need to gather some of the voices which were saying that open education is not a democratizing, liberating, and empowering end in itself. Open education is also

burdened with problems, and the Special Issue contains quite a few papers dealing with those problems. For example, some papers (i.e. Winn, 2015) look to the implications of open education for academic labour – how the drive and the imperative to open up educational resources creates a situation where educators feel that they have to work harder to produce those artefacts and resources. Obviously, that has profound implications for unpaid academic labour… MOOCs, for example, tend to be taught by precariously-positioned teaching associates rather than well-paid academics. Open education is packed with critical issues, and the Special Issue was an attempt to summarize some of those critical perspectives and to stimulate further thinking on the kinds of discussion that we need to have within the open education movement and take it forward in a good way.

PJ: What is the link between openness and creativity?

SB: I am frustrated, quite regularly, with the ways in which limits are placed on students' and anyone's ability to use digitized resources to create new artefacts. Applied to digital resources, copyright and intellectual property rights are a huge problem! For example, when we ran a MOOC 'E-learning and digital cultures' (University of Edinburgh, 2016h), we asked learners to create digital artefacts using resources they find on the Internet – you have to always make sure to obtain a permission to use the found resources, or to use only resources which are licenced through Creative Commons... I think these restrictions continually place limits on what students can do. This has come particularly to the fore in the work I have done with museum learning and museum collections (Bayne, Ross and Williamson, 2009), where we still find fantastic digitized collections of major artists which are not available for hacking and adapting by students and members of the public – because of copyright licensing issues. There is a massive body of scholarship in this area, but I still think there is a long way to go before we will be able to really creatively use open resources with our students.

PJ: In the digital age, digitization is prerequisite for openness. Based on your practical experiences, what are the main effects of digitizing cultural heritage? What is gained and what is lost during the process of digitization?

SB: We did some early projects on museum learning and digitization (Bayne, Ross and Williamson, 2009), and what came out of that research, quite strongly, is that museums were still focused in the main on material artefacts – digital representations are often seen as a weak alternative to the real thing. In many cases, this is obviously true… To see a painting *in situ*, in a gallery or in a public space, is often very different experience from a digital impression in the catalogue. Consequently, we found that there was still a very strong focus on visitor volume within the museum, and that the digital is seen as being in service to the material collections, of value to the extent it drives physical footfall. Thus, in many cases, digital projects were aiming to try and stimulate higher visitor levels to the actual physical museum. However, I think that things are probably changing quite rapidly in the digital cultural heritage field. These days we are in a better position to see

what is rich about artworks that are born digital, and it helps us to see the digital as valuable in its own right.

PJ: In a recent article, Michael Peters and I defined digital reading as "a cybercultural concept which understands reading as a cultural behavior that emphasizes an ecosystem of digital practices" (Peters and Jandrić, 2016: 154). In your work, the theme of digital reading and digital writing seems to pop up regularly at least since Learning Cultures in Cyberspace (Bayne, 2004). What is your take on digital reading and writing? What are the main cultural implications of these practices?

SB: In the context of education, these practices open up some really profound issues which I am not sure that universities and teachers have really come to terms with. Kathleen Fitzpatrick's work (2011), for example, helps us understand the ways in which digital text separates the author from the text in a way in which print media did not. Digital authorship is volatile, messy, changeable, where print text is stable and preservable. The link between text and author is loosened with digital texts, which has profound implications for how we think about – for example – the assessment of students' work. I wrote about this back in 2006 (Bayne, 2006) drawing on Mark Poster's work (2001) on Foucault's author function.

In the context of education, we need to be really careful about these things – particularly, as I say, when it comes to assessment practices. Assessment is still for the most part based on written text. We have not really grappled with what digital text might mean in that context, except to see it as an ongoing risk of plagiarism. So when we talk about digital texts in universities, and in digital education practice in particular, we tend to focus on the various risks of plagiarism, plagiarism detection… One of the most commonly used technologies within higher education is plagiarism detection software like Turnitin. However, plagiarism detection services often do not think about the creative potential of digital text for scholarship and academic writing. How can we use that risky volatility, copyability, rewritability, customizability of the digital text within university teaching, learning and assessment? At our MSc in Digital Education (University of Edinburgh, 2016g) we ask students to submit digital texts for assessment, and we ask them to think critically about what digital text does to notions of authorship, authenticity, and so on. We need to do a lot more research about digital texts within universities. There is still not that much work in the area, and I think it is really exciting.

Towards a critical posthumanist approach

PJ: During the past decades, algorithms have become ubiquitous actors in the global economy, as well as our social and material worlds – slowly but surely, we have entered the age of algorithmic cultures. What is the role of algorithms in education?

SB: As teachers, we need to give serious thought to how we want to partner with algorithms to conduct our work. We need to think about what an algorithmically

inflected teacher would look like, and some of this comes back to the posthumanist notion of where the human stops and where the machine starts. So the question is: Where does the human teacher leak into the algorithm, and where does the algorithm leak into the human teacher's practice? For me, Andrew Feenberg's work (i.e. Feenberg, 2003) has been really influential in relation to thinking where the social and the material worlds come together – where the human teacher's agency comes up against the workings of data to conduct another, and different, kind of teaching which is neither human not machinic but some kind of gathering of the two.

In higher education, we tend to focus on the needs of the human teacher – what kind of skills the human teacher needs to have, how many human teachers we need to teach the most students, what constitutes good practice for human teachers… And when we think of technology-based teaching – again, Andrew Feenberg's work has been fantastic here – we tend to react in a binary way. We either preach against technology, because we see online education and the various forms of artificial intelligence it might involve as threatening to the value of human contact between human teacher and human student, or we embrace the algorithm because we see technology as enabling us to be social in different ways. One way or another, when we think about what it means to teach in higher education, we tend to try very hard to keep the social and the technical separate from each other. However, the challenge over the next 20 or 50 years will be to think about the point at which the human teacher becomes the algorithm and the algorithm becomes the human teacher. At this moment, I do not think we have even started to grapple with that significantly.

PJ: I am fascinated by the relationships between big data, algorithms, and the politics of data science. Please allow me to paraphrase a recent blog entry by Ben Williamson (2016): Who owns educational theory in the age of algorithmic cultures?

SB: Ben writes really well about the corporate interests that are at play in big data, educational technology, and algorithmic culture, and the ways in which code acts within education in the interest of corporations rather than necessarily in the interest of students and teachers. Having said that, I am not sure that ownership is the most helpful way to think about educational theory at this point. Some of the most interesting work about the relationship between education and data has been done outside the academy – for example, by blog commentators like Audrey Watters. However, I think those of us within the university need to work hard to maintain the set of critical perspectives which are going to enable us to make sure that educational technology develops in the future in ways that we want it to. We should not allow the interest of corporations to drive what we do, and need therefore to maintain the critical perspectives that come out of the academy... Education is a site of constant negotiation and struggle, and will probably always be so.

PJ: One of the key features of algorithmic cultures is radical equality between human and non-human actors (Knox, 2015). Since early days of information technologies, computer scientists and science fiction writers have dreamt of artificial intelligence. What are the main consequences of radical equality between human and non-human actors, and how do they relate to artificial intelligence?

SB: The main challenge here is in trying to think about the non-supercessionist alternatives to the common trope of the day: Robots are coming to take over our jobs. That is a very dominant perspective, which has been around for a very long time, and which seems to have gained new energy recently. The Oxford Martin School's research on the automation of work, for example, the focus on the 'Fourth industrial revolution' we saw at the 2016 Davos meeting, and the glut of texts that have been published recently on this (Frey and Osborne, 2013). In the context of teaching, it is about trying to move beyond the idea that artificial intelligence can, or will, take over our jobs. We should not be asking the question: In 50 years from now, will there be a human or a robot teaching? Rather, we should be asking the question: What kind of combination of human and artificial intelligence will we be able to draw on in the future to provide teaching of the very best quality? What do we actually want from artificial intelligence? We should not allow artificial intelligence in education to be driven entirely by corporations or economists or computing and data scientists – we should be thinking about how we take control as teachers. So the important questions to be asked are: How could we do our jobs better with artificial intelligences? What might that look like, and how might our students benefit?

PJ: Your recent work on teacherbots explores teacher automation from a fairly unusual perspective: "The teacherbot explicitly worked with the idea that teacher automation does not have to be about rationalism and instrumentalism: 'botty' was not intended to 'solve' any productivity deficits in teachers, or to replace teachers, but rather to explore how an assemblage of teacher-student-code might be pedagogically generative." (Bayne, 2015: 465) What are the theoretical and practical consequences of pushing (our understanding of) teaching and learning beyond anthropocentrism?

SB: This sits quite strongly with the last answer, which was really about the challenge for education not to think anthropocentrically, but to try and think beyond anthropocentrism. We tend to think that if we have more teachers in classrooms, if we have more contact time, if we have more human teacher to student interaction – education will automatically be better. We still need to research these questions, because they have really important implications in various fields including digital academic labour. However, we can also be asking: What would it look like if we imagine the teacher working in partnership with the code, and / or with artificial intelligence, to offer a new kind of teaching? I think we need to move away from understanding automated teaching as a response to some kind of deficit in teachers. Rather, we need to think about automation as

being a chance to make teaching and learning radically better. I think that it is really useful to approach these questions from a non-anthropocentric position.

PJ: The question of digital labour popped up in several contexts through this conversation – it seems to be one of the main concerns of education, and many other fields, in the contemporary age of digital transformation. In your experience, Sian, what happens to academic labour when it becomes digitized?

SB: Digital academic labour has potential to be deregulated – it carries the potential for the job of teaching to become deprofesionalized, it carries the potential for neoliberal efficiency gains in teaching… So there are lots of dangerous potentials out there. However, it also carries some of the more creative, generative potentials such as the ability to reach new kinds of students, design creative digital pedagogies, re-work entrenched relations between students and teachers, students and campus, scholars and texts.

Obviously, we have all been affected by digital labour and digital academic labour – the new currents in academic work, the pressure to be always on, the pressure for instantaneous response times and limitless working hours… There is a lot in there. I think that a really important approach to dealing with these issues is to actually think, as teachers, what we want digital technology to do and to achieve. We need to try and create a positive model of digital academic labour, and to put it alongside the important critiques. We could do more to rethink teacher agency, and how that agency might be reformed and reformulated by automation. We, as teachers, need to think what we want from digital education and how it should be shaped and framed in the coming decades.

PJ: A lot of (your) research in teacher automation arrives from experiences obtained within the MOOCs. What is are the main promises and threats of the MOOCs? What is the future of the MOOCs?

SB: We have definitely moved on from the MOOC hype – today, in 2016, we have even moved on from the MOOC backlash. We are seeing, in some contexts (certainly here at the University of Edinburgh), that MOOCs have become mainstreamed. The promises and the threats of the MOOC have already been well articulated. One of the main promises was massive democratization of access to higher education, which has not actually happened. The threats were around the potential of delivery of teaching online and at scale to threaten the existence of our universities, and again that has not happened. In spite of some failed expectations, I do not think that MOOCs are going to go away. However, they are perhaps now going to get really interesting in the sense in which they provide us with challenging, interesting frameworks for accreditation. I think credit-bearing MOOCs are the next challenge. For example, can we use our MOOCs to fast-track admission to the university?

The MOOCs have been really good at raising the debate about technology in education, and the massive press and media interest in them really foregrounded the potential for creative, critical, generative innovation using technology within higher education. Within my own university, our MOOCs did amazing work in

getting academic colleagues to think anew about how we could teach online. Another important gain from the MOOCs is the way they have enabled us to share our research and expertise on a massive global scale. The two million people who participated in MOOCs organized by the University of Edinburgh, benefitted in some way from our research and teaching. The MOOCs have been huge – this is why I think that they are going to continue as a way of opening up access to teaching, research, and rethinking accreditation.

PJ: Speaking of algorithms and also about the MOOCs, it is hard to avoid the field of networked learning. According to an early definition, networked learning is "learning in which information and communication technology (ICT) is used to promote connections: between one learner and other learners; between learners and tutors; between a learning community and its learning resources" (Goodyear, Banks, Hodgson and McConnell, 2004: 1). What attracted you to networked learning? What are its strengths and weaknesses in comparison to other competing approaches such as Technology Enhanced Learning (TEL)? What is the main benefit of networked learning approach in the context of your work?

SB: I think networked learning and the work of researchers like Peter Goodyear, Vivien Hodgson, and David McConnell has been valuable, because it was one of the first strands of academic work which took digital education seriously as a research domain. The classic definition of networked learning you have given has been about connections between learners, tutors, and learning communities / learning resources. Yet, I have always thought that, to an extent, networked learning privileged the social connections between learners and tutors. In that regard, early networked learning was quite anthropocentric, and did not pay serious attention to the material connections between the human and the non-human. Recently, however, that seems to have shifted – the last two networked learning conferences had a lot of papers on actor network theory, non-anthropocentric approaches, and even a movement away from thinking about the network as the dominant metaphor. Networked learning theory is currently undergoing significant changes, so I think that it corresponds to the spirit of our times.

Speaking of networked learning, it is interesting to ask: How does it compare to technology enhanced learning (TEL)? Based in my recent paper 'What's the matter with 'technology enhanced learning'?' (Bayne, 2014), I think that the main difference is that technology enhanced learning is based in an instrumentalist perspective which sees technologies as being in service to existing pedagogic and institutional needs. In that regard, it separates the social from the technological, the human from the machinic, and just looks how technology can make what we already do better. Unlike networked learning, technology enhanced learning does not look critically at how digital technology challenges, reforms, and rearticulates teaching and the subjects of teaching. Compared to networked learning, I think, technology enhanced learning is very limited.

PJ: Your posthumanist approach to digital learning inevitably brings us to radical unity of human beings and our planet. What are the main challenges of being a researcher and teacher in the age of the Anthropocene?

SB: I think the main challenge facing teachers and researchers in the age of the Anthropocene is to try and move away from this entrenched, embodied legacy of humanism within education. I am interested in what is useful and important in humanism around agency and social justice. At the same time, I am trying to think what it means to be multiply connected both in ecological terms and in machinic-artificial terms, and how that may change what it means to teach, what it means to be an educator, and what it means to be a student. In my opinion, this is really the key question that we need to address. My work in this sense takes a critical posthumanist approach, rather than post-humanist *per se*.

When we look at the last few decades of thought about the position of the human in the humanities, the social sciences and even in the sciences, it always surprises me how far behind education has remained. There are now massive, radical bodies of post-anthropocentric thought developed in areas such as new materialism, actor network theory, environmental humanities and sociomaterialist perspectives in social science – yet, education and educational practice in particular have not really grappled with them. I have spent the most of my career grappling with these issues, and I still wonder how we could shift education beyond 20th century humanism to a creative, critical posthumanist perspective.

REFERENCES

Bayne, S., & Land, R. (Eds.) (2011). *Digital differences: Perspectives on online education*. Rotterdam: Sense Publishers.

Bayne, S., & Ross, J. (2007). The 'digital native' and 'digital immigrant': A dangerous opposition. *Proceedings of the Annual Conference of the Society for Research into Higher Education (SRHE)*. Retrieved 7 July 2017 from https://www.researchgate.net/publication/242237851_The_%27digital_native%27_and_%27digital_immigrant%27_a_dangerous_opposition.

Bayne, S. (2004a). *Learning cultures in cyberspace*. PhD Dissertation. Edinburgh: Queen Margaret University.

Bayne, S. (2004b). Smoothness and striation in digital learning spaces. *E-learning and Digital Media*, *1*(2), 302–316.

Bayne, S. (2006). Temptation, trash and trust: The authorship and authority of digital texts. *E-learning*, *3*(1): 16–26.

Bayne, S. (2008). Uncanny spaces for higher education: teaching and learning in virtual worlds. *ALT-J, Research in Learning Technology*, *16*(3), 197–205.

Bayne, S. (2010). Academetron, automaton, phantom: uncanny digital pedagogies. *London Review of Education*, *8*(1), 5–13.

Bayne, S. (2014). What's the matter with 'technology enhanced learning'? *Learning, Media and Technology*, *40*(1), 5–20.

Bayne, S. (2015). Teacherbot: interventions in automated teaching. *Teaching in Higher Education*, *20*(4), 455–467.

Bayne, S., Ross, J., & Williamson, Z. (2009). Objects, subjects, bits and bytes: learning from the digital collections of the National Museums. *Museum and Society*, *7*(2): 110–124.

Bayne, S., Gallagher, M. S., & Lamb, J. (2013). Being 'at' university: the social topologies of distance students. *Higher Education: The International Journal of Higher Education and Educational Planning*, *67*(5), 569–583.

Bayne, S., Knox, J., & Ross, J. (Eds.) (2015). Special issue: Critical approaches to open education. *Learning, Media and Technology*, *40*(3), 247–405.

Castells, M. (2001). *The Internet galaxy: Reflections on the Internet, business, and society*. Oxford: Oxford University Press.

Deleuze, G., & Guattari, F. (1988). *A thousand plateaus: Capitalism and schizophrenia*. London: Continuum.

Digital Education Group (2016). *Manifesto for teaching online.* Retrieved 7 July 2017 from https://onlineteachingmanifesto.wordpress.com/the-text/.

Edinburgh University's Student Association (2016). Teaching Award Nominees & Winners. Retrieved 7 July 2017 from https://www.eusa.ed.ac.uk/representation/campaigns/teachingawards/nominees/.

Edwards, R. (2010). The end of lifelong learning: A post-human condition? *Studies in the Education of Adults*, *42*(1): 5–17.

Edwards, R. (2015). Knowledge infrastructures and the inscrutability of openness in education. *Learning, Media and Technology*, *40*(3), 251–264.

Feenberg, A. (2003). Modernity theory and technology studies: Reflections on bridging the gap in modernity and technology. In T. J. Misa, P. Brey, & A. Feenberg (eds.), *Modernity and Technology* (pp. 73–104). Cambridge, MA: MIT Press,.

Fitzpatrick, K. (2011). The digital future of authorship: Rethinking originality. *Culture Machine*, *12*.

Frey, C. B., & Osborne, M. A. (2013). The future of employment: How susceptible are jobs to computerisation? Oxford Martin School Working Paper No. 7. Retrieved 7 July 2017 from http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf.

Gibson, W. (1984). *Neuromancer.* New York: Ace Books.

Goodyear, P., Banks, S., Hodgson, V., & McConnell, D. (2004). Research on networked learning: An overview. In P. Goodyear, S. Banks, V. Hodgson, & D. McConnell (Eds.), *Advances in research on networked learning* (pp. 1–10). Boston, MA: Kluwer.

Haraway, D. (1991). *Simians, cyborgs and women: The reinvention of nature*. New York: Routledge.

Hine, C. (2000). *Virtual ethnography*. London: Sage.

Honeychurch, S., Stewart, B., Bali, M., Hogue, R. J., and Cormier, D. (2016). How the community became more than the curriculum: participant experiences in #RHIZO14. *Current Issues in Emerging eLearning*, *3*(1), 3.

Jandrić, P. (2016). The methodological challenge of networked learning: (post)disciplinarity and critical emancipation. In T. Ryberg, C. Sinclair, S. Bayne, & M. de Laat (Eds.), *Research, Boundaries, and Policy in Networked Learning* (pp. 165–182). New York: Springer.

Kennedy, G. E., & Krause, K. (2008). First year students' experiences with technology: Are they really digital natives? *Australasian Journal of Educational Technology*, *24*(1), 108–122.

Knox, J. (2015). Critical education and digital cultures. In M. A. Peters (Ed.), *Encyclopedia of Educational Philosophy and Theory* (pp. 1–6). Singapore: Springer.

Land, R., & Bayne, S. (2005). *Education in cyberspace*. London: Routledge.

Law, J., & Mol, A. (2001). Situating technoscience: An inquiry into spatialities. *Environment and Planning D.*, *19*, 609–621.

Law, J. (2002). Objects and spaces. *Theory, Culture & Society*, *19*(5/6), 91–105.

Meyer, J. H. F., & Land, R. (2005). Threshold concepts and troublesome knowledge (2): epistemological considerations and a conceptual framework for teaching and learning. *Higher Education*, *49*(3), 373–388.

Miller, D. & Slater, D. (2001). *The Internet: An ethnographic approach*. London: Bloomsbury.

Mol, A. & Law, J. (1994). Regions, networks and fluids: anaemia and social topology. *Social Studies of Science*, *24*(4), 641–671.

Networked Learning Conference (2016). NLC2016: Looking back – moving forward. Retrieved 7 July 2017 from http://www.networkedlearningconference.org.uk/index.htm.

Peters, M. A., & Jandrić, P. (2016). Digital reading. *Review of Contemporary Philosophy*, *15*, 153–170.

Poster, M. (2001). *What's the matter with the Internet?* Minneapolis, MN: University of Minnesota Press.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, *9*(5), 1–6.

Ross, J., & Bayne, S. (2011). 'Digital native' and 'digital immigrant' discourses: A critique. In S. Bayne & R. Land (Eds.), *Digital differences: Perspectives on online education* (pp. 159–169). Rotterdam: Sense Publishers.

Royal Commission on the Ancient and Historical Monuments of Scotland (2016). The digital futures of cultural heritage education: a social media research agenda for the Scottish National Collections. Retrieved 7 July 2017 from http://digitalfutures.rcahms.gov.uk/.

Royle, N. (2003). *The uncanny.* Manchester: Manchester University Press.

Ryberg, T., Sinclair, C., Bayne, S., & de Laat, M. (Eds.) (2016). *Research, Boundaries, and Policy in Networked Learning*. New York: Springer.

Sheller, M., & Urry, J. (2006). The new mobilities paradigm. *Environment and Planning A*, *38*, 207–226.

University of Edinburgh (2016a). New geographies of learning: Distance education and being 'at' The University of Edinburgh. Retrieved 7 July 2017 from http://www.de.ed.ac.uk/project/new-geographies-learning-distance-education-and-being-university.

University of Edinburgh (2016b). Putting art on the map. Retrieved 7 July 2017 from http://www.de.ed.ac.uk/project/putting-art-map.

University of Edinburgh (2016c). Coding the MOOC teacher. Retrieved 7 July 2017 from http://www.research.ed.ac.uk/portal/en/projects/coding-the-mooc-teacher(1f709b7d-dc31-4644-b541-a81228fb2f9a).html.

University of Edinburgh (2016d). Managing Your Digital Footprint. Retrieved 7 July 2017 from http://www.de.ed.ac.uk/project/managing-your-digital-footprint.

University of Edinburgh (2016e). Dissertations at a Distance. Retrieved 7 July 2017 from http://disdis.de.ed.ac.uk/.

University of Edinburgh (2016f). Chancellor's Awards. Retrieved 7 July 2017 from http://www.ed.ac.uk/about/people/prize-winners/chancellors-awards.

University of Edinburgh (2016g). MSc in Digital Education. Retrieved 7 July 2017 from http://digital.education.ed.ac.uk/.

University of Edinburgh (2016h). E-learning and Digital Cultures. Retrieved 7 July 2017 from http://www.ed.ac.uk/studying/moocs/subjects/humanities-social-sciences/e-learning-digital-cultures.

Van Dijk, J. (1999). *The network society*. London: SAGE.

Wells, H. G. (1895). The time machine. Project Gutenberg. Retrieved 7 July 2017 from http://www.gutenberg.org/cache/epub/35/pg35-images.html.

Williamson, B. (2016). Who owns educational theory? Pearson, big data and the 'theory gap'. Retrieved 7 July 2017 from https://codeactsineducation.wordpress.com/2016/01/19/who-owns-educational-theory/.

Winn, J. (2015). Open education and the emancipation of academic labour. *Learning, Media and Technology*, *40*(3): 385–404.

Wolfe, C. (2003). *Animal rites: American culture, the discourse of species, and posthumanist theory.* Chicago, IL: University of Chicago Press.